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2001-2010: Decade to Roll Back Malaria in Developing Countries, particularly in Africa

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Note by the Secretary-General

The Secretary-General hereby transmits the report of the World Health Organization reviewing the key elements of General Assembly resolution 57/294 of 20 December 2002. It describes the structure of the Roll Back Malaria Partnership and highlights the key issues in resource mobilization and financing, including the role of the Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria.

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Summary

The present report highlights the activities undertaken and the progress made since the last report in meeting the goals of the Decade. The report reviews the key elements of General Assembly resolution 57/294. The report also examines in detail the issue of access to effective treatment for malaria. In doing so, the problem of increasing resistance to conventional anti-malarial medicines is analysed and alternative treatments discussed. While it notes that the World Health Organization (WHO) has recommended a major change in the treatment policy for malaria, the report makes clear that there are significant problems, mainly relating to the lack of resources that prevents the widespread use of newer, more effective treatments. The report also updates the previous report on the value of one of the key tools for malaria control, that is, insecticide-treated nets and the new developments in increasing their effectiveness.

The report highlights concrete activities of the Roll Back Malaria Partnership, including the more focused look at malaria in pregnant women and children. Capacity development and research are also key interventions covered by the report and are crucial to the sustainability of malaria control programmes. The report concludes with a review of progress made towards meeting the goals contained in the Abuja Declaration on Roll Back Malaria in Africa and suggests action that could be taken by the General Assembly to help to accelerate progress in meeting the goals of the Decade.

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I. Background

1. In its resolution 58/237 of 23 December 2003, entitled 2001-2010: Decade to Roll Back Malaria in Developing Countries, particularly in Africa, the General Assembly took note of the declarations and decisions adopted by the Organization of African Unity, in particular the declaration and plan of action on the "Roll Back Malaria" initiative adopted at the Extraordinary Summit of the Heads of State and Government of the Organization of African Unity, held in Abuja on 24 and 25 April 2000, and recognized the linkages in efforts being made to reach the targets set in the Abuja Summit as necessary and important for the attainment of the "Roll Back Malaria" goal and the targets of the United Nations Millennium Declaration by 2010 and 2015, respectively. The Assembly also recognized the urgent need for scaling up national malaria control programmes if African countries were to meet the intermediate target set by the Abuja Summit for the five-year period of 2000-2005. The Assembly emphasized the importance of implementing the Millennium Declaration and welcomed the commitment of the Member States to respond to the specific needs of Africa. It commended the efforts of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) and other partners to fight malaria, including the launching of the Roll Back Malaria Partnership in 1998.

2. The resolution called for support of the recommendations contained in the report of the Secretary-General (A/58/136 and Corr.1). In summary, these were (a) a call upon the international community to continue to support the "Roll Back Malaria" partner organizations, including WHO and UNICEF, as vital complementary sources of support for the efforts of malaria-endemic countries to combat the disease; (b) to ensure that the Global Fund to Fight AIDS, Tuberculosis and Malaria receive increased funding to support sound national plans to control malaria; (c) to urge malaria-endemic countries to increase domestic resource allocation to malaria control; (d) to encourage African countries that had not yet done so to implement the recommendations of the Abuja Declaration to waive taxes and tariffs on nets, netting materials and other products needed for malaria control; (e) to support ways of stimulating production of insecticide-treated nets in Africa and to encourage and facilitate the transfer of technology relative to long-lasting insecticidal nets.

3. The Assembly reiterated the need for expanded public-private partnerships for malaria control and prevention, and in this context urged petroleum companies operating in Africa to consider providing polymer for the manufacture of mosquito nets at reduced prices in Africa. In addition, the Assembly recognized the importance of the development of effective vaccines and new medicines to prevent and treat malaria, and the need for further research. It urged the pharmaceutical industry to take note of the increasing need for effective combination treatment for malaria, particularly in Africa, and to form additional alliances and partnerships to help to ensure that all people at risk have access to prompt, affordable and quality treatment.

4. The General Assembly requested the Secretary-General, in close collaboration with WHO, developing countries and regional organizations, including the African Union, to conduct in 2005 an evaluation of the measures taken and progress made towards the achievement of the mid-term targets, the means of implementation provided by the international community in this regard and the overall goals of the Decade, and to report thereon to the General Assembly at its sixtieth session. The

Secretary-General was also requested to report to the Assembly at its fifty-ninth session on the implementation of the resolution.

II. Roll Back Malaria Partnership

5. The Roll Back Malaria Partnership, launched in 1998 by WHO, the World Bank, UNICEF and the United Nations Development Programme (UNDP), includes malaria-endemic countries, their bilateral and multilateral development partners, the private sector, non-governmental and community-based organizations, foundations, and research and academic institutions. During its early phase (1998-2001), the Partnership functioned as a loose network of stakeholders for developing and maintaining shared visions and objectives. An external evaluation of the Partnership in 2002 called for a more formal governance structure to enhance support to countries for scaling up malaria-control interventions. The Partnership's new structure, adopted in 2002, includes a Partnership Board, a Partnership secretariat, thematic working groups, subregional networks, country partnership advisers and malaria champions.

6. The Roll Back Malaria Partnership Board oversees the work of the Partnership at large and helps to expand the number of partners. It brings together all constituencies concerned with scaling up malaria control efforts at the country level. The Roll Back Malaria Partnership secretariat, hosted by WHO, is responsible for optimizing support for country-level efforts, supporting the scaling-up operation of the Partnership. Its mission is to ensure that contributions from individual Roll Back Malaria partners are coordinated and focused on the needs of countries and is in line with best-practice recommendations and technical norms and standards. The secretariat is managed by the Executive Secretary of the Roll Back Malaria Partnership and operates at the global, regional, subregional and country levels. The four main areas of the secretariat's work at the global level are: (a) partnership development and networking; (b) country support development; (c) communication and advocacy; and (d) resource mobilization and financing.

7. The Partnership has established working groups responsible for establishing consensus on best practices for scaling up. They cover the following areas: (a) malaria case management; (b) communication; (c) financing and resource mobilization; (d) insecticide-treated nets; (e) malaria in pregnancy; and (f) monitoring and evaluation. The Partnership has adopted several consensus statements, as well as a comprehensive strategy document entitled "Scaling-up for sustained impact: Roll Back Malaria strategic orientations", which addresses the attainment of the Abuja targets.

8. At the regional level, the Roll Back Malaria Partnership secretariat has served as a liaison between regional partners, such as the African Union, the Economic Community of West African States, the New Partnership for Africa's Development, the Southern African Development Community, WHO and UNICEF regional offices and regional initiatives in Mekong and Asia. The Partnership's subregional networks in Central, East, Southern and West Africa coordinate partner support on technical and operational issues for scaling up equitable access to malaria control interventions within countries. By pooling resources, these networks ensure that multidisciplinary expertise is available to meet the priority needs of countries.

9. To ensure that malaria remains an important issue to all partners and to the general public, the Partnership's advocacy efforts over the past year have included: (a) collaboration with country health officials to ensure that malaria receives high-level attention in health sector reviews, planning meetings and related reports; (b) support to Africa Malaria Day 2004 activities at the global, regional and country levels; (c) ensuring visibility of Roll Back Malaria at a calendar of key United Nations, international, regional and country meetings and events to highlight malaria issues and progress; (d) production and maintenance of a range of Roll Back Malaria Partnership advocacy tools; and (e) redesign and maintenance of the Partnership web site (http://rbm.who.int).

10. The Partnership has identified 14 African "focus" countries with a high degree of readiness to implement national-scale malaria-control programmes, and has worked with those countries to identify bottlenecks hampering implementation, negotiate packages of coordinated technical and programmatic support and promoting the sharing of experience.

III. Resource mobilization and financing

11. The global resource needs to effectively roll back malaria have previously been estimated at US$ 1.5 to 2.5 billion per year, with the greatest funding requirements in Africa. The rapidly increasing parasite resistance to the inexpensive antimalarial medicines currently used is now resulting in the need for new, more effective products that are significantly more expensive. These new products include Artemisinin-combination therapies (ACTs) and it has been estimated that, at current prices, ACTs for the over 600 million people exposed to malaria in Africa alone will cost around $1 billion per year. Consequently, such products constitute an increasingly large component of malaria control programmes and the global funding requirements will have to be adjusted upwards. On the other hand, ACT prices are expected to decrease somewhat in some years, when demand and production have stabilized at higher levels. Furthermore, increased coverage by insecticide-treated nets and the use of diagnostic tools are likely to reduce expenditures on medicines in the long term.

12. The Global Fund to Fight AIDS, Tuberculosis and Malaria, which started its operations in 2002, has become an important international source of additional funding for malaria control. In its first three rounds, the Fund allocated $942 million on a five-year basis for malaria control in 59 countries, including 39 in Africa. After round three, criticism was voiced about the limited funding by the Fund for ACTs, despite the recommendation from WHO that these be used as first-line treatment of malaria in areas where resistance to the older drugs was increasing. Following this criticism, Roll Back Malaria partners, including the Global Fund, issued clear public statements endorsing the large-scale deployment of ACTs, especially in African countries affected by drug-resistant falciparum malaria. Following the round four call for proposals in early 2004, the board of the Fund approved an additional amount of $900 million for 23 malaria components, bringing its total malaria allocations on a five-year basis to about $1.8 billion (the approved two-year budgets total $881 million, or 29 per cent of the portfolio for the three diseases). The five-year allocations include a total of 160 million ACT treatment courses and 108 million insecticide-treated nets. Until now, there has been a certain time lag for implementation, which although understandable, considering the scale of operations

in this initial phase, is frustrating for many recipients. By mid-2004, eight malaria grants, totalling $33 million, had included one year in operation, and it is therefore too early to look for the disease impact of the Fund. Roll Back Malaria partners, in particular WHO, have responded to numerous country requests to assist in developing Fund proposals, as well as to address critical technical issues pertaining to interventions to be selected and quickly scaled up.

13. Other resource flows for malaria control are more difficult to track, in particular out-of-pocket expenditures and public funding embedded in the provision of basic public health services and which are increasingly financed through broad budget support programmes. In 2004, the Partnership has worked towards improving resource allocations for malaria at the country level to complement funding available from the endemic countries, the Global Fund and external donors. Coordinating an optimal use of these resources is increasingly challenging, owing to the introduction of interventions that are both new to countries and more expensive. Sound planning, at the programme level, is more critical than ever, as malaria control remains well integrated into national health systems. More and more countries are also delivering some interventions through campaigns, for example, in conjunction with the national immunization programmes as part of a new approach to extend access to key antimalarial products. Such changing approaches also add new dimensions in planning and budgeting exercises. The increasing and competing demands for resources at the country level necessitates that programmes show progress towards agreed goals and efficiency in the use of allocated resources. The Roll Back Malaria Partnership is supporting the development of new tools to improve planning and monitoring of malaria-control programmes. A malaria control cost-estimation tool will be piloted at the country level during 2004 to improve the capacity of national health systems to better plan and budget for scaling up malaria control.

14. Assuring efficient procurement of new and large quantities of antimalarial commodities is essential for countries to scale up interventions. Some key commodities, such as newer antimalarial medicine combinations and insecticide-treated nets are not yet being produced in large enough quantities, as manufacturers are uncertain of forecasting. The Partnership is now establishing a Malaria Medicines and Supply Service, which will work to remove obstacles to access for essential products, such as ACTs, long-lasting insecticidal nets and diagnostics. The Service will carry out global forecasting of supply and demand requirements; communicate with manufacturers for scaled-up production; support country procurement actions; and monitor funding levels for and expenditures on antimalarial commodities. Through this mechanism, the Partnership will bridge the gap between manufacturers and countries requiring high-quality products on a large scale at the lowest possible prices, to be able to make the best use of financing from all sources for effective disease control.

IV. Access to effective treatment for malaria

15. The global malaria situation is threatened by the increasing resistance of Plasmodium falciparum to conventional antimalarial medicines, such as chloroquine, sulfadoxine-pyrimethamine and amodiaquine. Multidrug-resistant Plasmodium falciparum malaria has been widely prevalent in South-East Asia and

South America, and resistance has now reached unacceptably high levels in Africa, the continent with the highest burden of malaria cases and deaths.

16. In response to this situation, WHO has recommended a major change in the treatment policy for falciparum malaria, abandoning the use of single treatments (monotherapies) and adopting combination therapies, preferably the highly effective ACTs, when a significant level of resistance to previous medicines is detected. Since 2001, 40 malaria-endemic countries have adopted combination therapies, 36 as first-line treatment and four as second-line treatment, and an additional 14 countries are in the process of changing their malaria treatment policy. WHO has provided technical support to ministries of health on all aspects of national treatment policy change, including the monitoring of the therapeutic efficacy of medicines, and updating and implementing treatment policies.

17. At present, the new ACTs cost over 10 times the price of conventional monotherapies. According to WHO forecasts, at least 30,000,000 adult ACT courses will be required globally in 2004 and another 132,000,000 courses by the end of 2005. This exponential increase in demand presents challenges in the short term, because artemisinin is derived from a plant, Artemisia annua, which has to be cultivated on an increased scale. WHO, UNICEF, the Global Fund to Fight AIDS, Tuberculosis and Malaria and other Roll Back Malaria partners are working with ACT manufacturers to identify mechanisms to ensure a sufficient supply of quality products. Until now most of the artemisinin in the world has been produced in China and Viet Nam; the international efforts to increase its availability include exploration of the possibility of large-scale production of artemisinin in Africa, where pilot cultivation schemes in northern United Republic of Tanzania have been encouraging.

18. To ensure the quality of products, an international mechanism to pre-qualify manufacturers of artemisinin compounds and ACTs has been established by WHO and UNICEF. Products and manufacturers that comply with internationally recommended standards are included in a list, which is published as a guide to all those involved in procuring ACTs. To date, one ACT, artemether-lumefantrine (Coartem®), has been pre-qualified and a special price agreement negotiated by WHO with its manufacturer. Access to ACTs for poor people who suffer from malaria still requires the development of a range of alternatives, increased competition among producers, increased global financing and appropriate policies for health financing at the country level. A non-profit private-public foundation, the Medicines for Malaria Venture, has since 2001 been engaged in discovery and development of novel antimalarial medicines. It collaborates closely with scientists in the field, industry and international organizations and is expected to play a major role in ensuring the availability of affordable, effective antimalarials in the future. Currently, its pipeline includes three novel ACTs, as well as a synthetic artemisinin-like compound.

19. Ideally, the expenditures for antimalarial medicines could be greatly reduced and more rationally used by the application of parasite-based diagnosis. Diagnosis by microscopy has not been used in the peripheral health services, owing to the difficulty in maintaining a high level of skills. More recently, simple rapid diagnostic tests have become available. WHO and Roll Back Malaria partners are working intensely on the establishment of quality assurance for these products and on an operational research agenda to assess the feasibility and cost-effectiveness of

using them at the service delivery level in various operational and epidemiological settings. Currently, most malaria cases, especially in Africa, are detected in the home and treated with medicines that have been acquired outside formal health services. Research has shown that "home management of malaria", a package including education of mothers, training of community-level providers and supply of pre-packaged quality medicines, can reduce malaria mortality and morbidity. These interventions will need to be fully implemented in areas of high malaria transmission to ensure early access to prompt effective treatment, as is now taking place in some African countries.

V. Enhancing malaria vector control

20. Achieving complete coverage with insecticide-treated nets in populations living in areas of intense malaria transmission in Africa and elsewhere remains one of the main challenges to Roll Back Malaria. There have been positive experiences with the promotion of insecticide-treated nets, based on various kinds of commercial mechanisms and cost-sharing, including social marketing. However, such approaches alone will not be sufficient for achieving the Abuja targets of 60 per cent coverage. Much greater emphasis must be given to subsidized or free distribution of such nets to achieve coverage of vulnerable groups such as children under the age of five, pregnant women and people living with HIV/AIDS. As shown in the joint WHO-UNICEF *Africa Malaria Report 2003*, the coverage of mosquito nets far exceeds the coverage of insecticide-treated nets, and it is now widely recognized that adequate re-treatment rates can only be achieved by providing re-treatment as a free public service. Free re-treatment is provided in campaigns in the east Asian countries, where insecticide-treated nets have been deployed on a large scale since the early 1990s, and in several African countries with high net coverage.

21. Experiences from a number of countries (such as Cambodia, Ghana, Eritrea, Malawi and Zambia) indicate that subsidized or free distribution of nets to vulnerable groups in rural areas, for example in combination with immunization campaigns, is associated with high rates of use. Campaigns combining distribution of the nets with measles immunization campaigns are now being planned in the Niger, Togo and several other African countries involving a broad partnership of the International Federation of the Red Cross and Red Crescent Societies, UNICEF, centres for disease control, WHO and others. Through a joint statement issued in early 2004, UNICEF and WHO have committed themselves to supporting further development of the partnership between immunization and malaria control programmes, for example in relation to polio immunization days and routine Expanded Programme on Immunizations activities. It is envisaged that such programme cooperation, which may also include other preventive activities, such as elimination of lymphatic filariasis, deworming and distribution of micronutrients, will include not only service delivery, but also planning, management and monitoring.

22. Techniques for long-lasting treatment of mosquito nets provide a possible solution to the problem of maintaining re-treatment coverage. In late 2003, WHO provided an interim recommendation for a second brand of long-lasting insecticidal net and these are now being rapidly adopted in many countries. Although they are more expensive than conventional insecticide-treated nets, the cost of maintaining coverage is lower, as they remain useful for four to five years. Industry is working

on development of still more brands, as well as on innovative simple technologies for long-lasting treatment of nets, which may be applied by public health programmes at the field level. A Roll Back Malaria Partnership programme for transfer to Africa of such technologies is under development; a major achievement was the start of production of one brand of long-lasting insecticidal net by a producer in the United Republic of Tanzania in late 2003.

23. The dwindling arsenal of low-risk and cost-effective insecticides for public health use is a threat to vector control in malaria-endemic countries. This is a result of growing vector resistance and the lack of development over the past 20 years of new insecticide compounds for public health use. WHO is pursuing a two-pronged strategy to address this situation: in the short and medium term, and to assure continued effectiveness of existing insecticides, support is being provided to strengthen the capacities of endemic countries for judicious use of insecticides and effective management of vector resistance; for the longer term, concerted efforts are undertaken towards a public-private partnership for development of new insecticides for public health use.

24. On 17 May 2004, the Stockholm Convention on Persistent Organic Pollutants came into force. While enforcing strict measures to reduce environmental damage from such pollutants, the Convention recognizes that DDT is still needed in some countries for disease vector control in accordance with WHO guidelines and recommendations. WHO recommends that DDT be used only for indoor residual spraying for control of certain vector-borne diseases, including malaria. DDT is one of 12 insecticides that can be used for this purpose and the selection should be based on a local situation analysis. Indoor residual spraying is a highly effective method for malaria vector control, which is particularly useful when rapid effect is needed, such as in the case of epidemics and some other emergency situations. In areas of intense malaria transmission, where it is foreseen that vector control coverage will be needed for many years, insecticide-treated nets, which have a similar long-term impact, are generally preferred, as they are usually much more sustainable, because of their popularity and active household involvement. Many countries have epidemic-prone as well as stable malaria areas and need to select interventions as well as insecticides on the basis of local situation analyses. Support to country capacity-building for effective malaria vector control is being enhanced. Several endemic countries in Africa have been supported in needs assessment for developing realistic national malaria vector control strategies within the context of integrated vector management. The second half of 2004 will see an expansion of this support to more endemic countries in all WHO regions.

VI. Malaria in pregnant women and infants

25. Malaria in pregnancy can cause spontaneous abortion, stillbirth, premature delivery and low birth weight; it is estimated that malaria causes the death of approximately 200,000 infants in Africa per year through these effects. The disease is also an important cause of anaemia and other malaria complications in pregnant women; furthermore, the negative effects in pregnancy are even greater in women infected with HIV. WHO recommends a three-pronged strategy for reducing the impact of malaria in pregnant women: (a) prompt access to effective treatment for malarial illness; (b) intermittent preventive treatment for asymptomatic malaria infections; (c) use of insecticide-treated nets. The intermittent preventive treatment

component of this strategy involves provision of at least two treatment doses of an effective antimalarial drug during routine antenatal clinic visits to all pregnant women living in areas of stable transmission falciparum malaria. Now an integral part of the "making pregnancy safer" strategy, intermittent preventive treatment has been adopted as policy by 19 countries in the Africa region and is being implemented in pilot sites in three additional countries. Several other countries in Africa are reviewing their policies in the light of this recommendation. All malaria-endemic countries have policies for treatment of malarial illness in pregnancy and the majority of highly endemic countries recommend that pregnant women also have access to insecticide-treated nets.

26. Five countries in Eastern and Southern Africa (Kenya, Malawi, Uganda, the United Republic of Tanzania, Zambia) have formed a coalition of malaria and reproductive health programmes (Malaria in Pregnancy Eastern and Southern Africa Coalition) to reduce the impact of malaria in pregnancy through collaboration between malaria and reproductive health programmes. Countries in West Africa have formed a similar partnership (Réseau d'Afrique de l'Ouest contre le Paludisme pendant la Grossesse). In Central Africa, eight countries held a meeting in June 2004 to accelerate the adoption and implementation of intermittent preventive treatment in an effort to reach the Abuja targets by 2005. To support the implementation and scaling up of malaria in pregnancy interventions, a Malaria in Pregnancy Working Group has been formed by WHO and the Roll Back Malaria Partnership to provide technical guidance in the implementation of malaria in pregnancy activities. In addition, a policy framework for malaria in pregnancy in the WHO African region has been finalized. English, French and Portuguese versions are available. Implementation guidelines for malaria in pregnancy interventions are currently in preparation.

27. Severe malarial anaemia takes a heavy toll on children living in malaria-endemic regions of Africa, with the greatest burden and highest mortality occurring in infants. Recent research done in the United Republic of Tanzania demonstrated a reduction by 50 per cent or more in episodes of malaria and anaemia in infants given an antimalarial drug three times during the first year of life at the time of routine vaccination. This strategy is attractive, since sustainable delivery may be achieved through the Expanded Programme on Immunizations. However, before it can be considered for inclusion in national malaria control policies, a number of issues need to be addressed. These include demonstration of efficacy and safety in a range of epidemiological settings, acceptability and the impact on both serological responses to Expanded Programme on Immunizations vaccines and drug resistance. A consortium of research groups, WHO and UNICEF, supported by the Bill and Melinda Gates Foundation, has been established to address these issues.

VII. Malaria epidemics and complex emergencies

28. Over 30 per cent of global malaria mortality occurs in countries affected by complex emergency situations. Some 23 countries in Africa alone are currently affected by complex emergencies or massive refugee crises. Population movements and displacement, increased vulnerability due to malnutrition and concurrent infections, poor or absent housing, collapse of health services, poor coordination among health agencies, ongoing conflict limiting access and environmental deterioration resulting in increased vector breeding all contribute to the increased

malaria burden in affected populations. Malaria control in complex emergencies requires specially adapted strategies. The Roll Back Malaria initiative is supporting countries and agencies to implement effective malaria control, through the development of guidelines, including a comprehensive inter-agency handbook, the mobilization of partners to draw up national strategic plans, which may include proposals of the Global Fund to Fight AIDS, Tuberculosis and Malaria and the posting of experienced international staff in countries. The Roll Back Malaria initiative plans to gradually expand support to additional countries, subject to the availability of funds. The challenge is to implement priority malaria control interventions that are scientifically optimal and operationally feasible. New interventions, such as insecticide-treated tarpaulins and plastic sheeting, are currently undergoing rigorous field evaluation done through collaboration between non-governmental organizations, scientific institutions and WHO.

VIII. Capacity development for Roll Back Malaria

29. Capacity development for the Roll Back Malaria initiative remains critical to the achievement of agreed targets. With the advent of increasing international funding through the Global Fund, malaria-endemic countries need to reorient malaria control programmes, which in the past may have developed a good capacity for strategic planning and implementation on a very small scale towards efficient large-scale implementation through existing health service infrastructure and, in most cases, coordination of an array of partners. For scaling up capacities within the health system, the efforts must focus on clinical, epidemiological and operational knowledge for diagnosis and case management and monitoring therapeutic efficacy. For proper planning and implementation of vector control, a range of technical skills for integrated vector management are needed and must be complemented by managerial skills. Control programmes also need to build their capacity for engaging other health programmes, communities, the private sector and non-governmental organizations.

30. The Roll Back Malaria initiative's capacity development activities centre on enabling environment, intensification of training and institutional strengthening and networking. Over the past two years, WHO has trained more than 100 national and subnational malaria programme managers and senior health officers in Africa to strengthen their knowledge and skills on programmatic and technical issues.

31. A tool for capacity assessment, which helps in strategic planning and prioritization, has also been developed and is being used in some African and Eastern Mediterranean countries. A district capacity-building package, which integrates all malaria-related activities with other major health programmes, is currently under development.

32. In order to address epidemic malaria, the Roll Back Malaria initiative has supported efforts to build capacity to improve preparedness, early recognition and effective and timely response through the malaria early warning system, which uses remote sensing. Eight African countries (Eritrea, Ethiopia, Kenya, Mali, the Niger, Senegal, Uganda and Zambia) have included the system with climate and vulnerability monitoring in their application to the Global Fund to Fight AIDS, Tuberculosis and Malaria. Weekly disease surveillance through sentinel sites is now applied in the following African countries: Angola, Botswana, Kenya, Malawi,

Mali, Mozambique, Namibia, the Niger, Senegal and Uganda. WHO guidelines on the prevention and control of malaria epidemics are available. Taking a proactive stance in mitigating epidemic malaria is critical, given the fact that it is considered to be a serious public health emergency, resulting in a high case fatality rate among people of all ages. It is estimated that up to 144 million people in Africa live in areas at risk of epidemic malaria, resulting in up to 12 million malaria episodes and from 155,000 to 310,000 deaths per year. Putting in place the infrastructural capacity to deal with epidemic malaria is complicated by the fact that it is difficult to allocate resources for events which may be unconfirmed or uncertain. This remains a major challenge at a time when resources are not sufficient to address the day-to-day health-care needs of malaria-affected populations.

IX. Research activities as key interventions to achieve and sustain the Roll Back Malaria goal

33. The UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases strategy for malaria research has been defined on the basis of an analysis of control challenges and needs, scientific opportunities and Programme's comparative advantages. The malaria research strategic emphases identified are implemented mainly through four main groups of research and training activities: (a) research on new tools and implementation strategies for improved treatment; (b) research on new tools and implementation strategies for improved prevention; (c) development of new approaches for malaria treatment and prevention; and (d) capacity-building and joint multilateral initiatives on malaria and activities of the Special Programme for Research and Training in Tropical Diseases focusing on the above-mentioned strategic issues and challenges.

34. Within recent years, the Special Programme for Research and Training in Tropical Diseases has concentrated efforts on the following areas:

(a) *New knowledge*. The Special Programme continues to invest in basic and strategic research as a source of innovation that can stimulate the development of new tools and methodologies necessary to fight infectious diseases. The activities focus on translational research to better utilize genomic information to enhance drugs, vaccines and diagnostics discovery, functional genomics derived from the Anopheles gambiae sequence and ethical, legal and social implications of the potential use of genetically modified mosquitoes for malaria control;

(b) *Drug research and development*. A major highlight of 2003 was the regulatory approval granted to chlorproguanil-dapsone with GlaxoSmithKline. Consistent with the Roll Back Malaria initiative's strategy of promoting artemisinin combination therapy, the Special Programme is also partnering GlaxoSmithKline and the Medicines for Malaria Venture to develop a fixed-dose combination drug containing chlorproguanil-dapsone and artesunate. Further activities include extending paediatric use of Coartem in young children weighing as little as 5 kg in weight;

(c) *Diagnostics research and development*. Reliable criteria for assessing quality assured properties that meet defined public health specifications have been determined in 2003 in collaboration with the WHO Western Pacific Regional Office. These criteria are now being used by WHO procurement services to assess which

tests may be purchased and recommended for public health use. Studies have further demonstrated the value of rectal artesunate used to treat malaria patients, close to home, who are unable to take oral treatment. This option is useful for the field testing of strategies for the deployment of rectal artesunate, which are under investigation.

35. The strengthening of research capacity continues to permeate every area of activities. In particular, through joint Multilateral Initiatives on Malaria/Special Programme for Research and Training in Tropical Diseases effort, special emphasis is being placed on building capacity and support malaria research in Africa. In the basic and strategic research area, there has been major emphasis on bioinformatics training and a South-South initiative for promoting applications in genomics. In product research and development, emphasis continues to be placed on capacity-building and training in good laboratory practice and good clinical practice. This has led to further activities in bioethics and the development of a Strategic Initiative for Developing Capacity for Ethical Review. There is also work under way to institutionally develop data management centres in each of the regions in which the Special Programme undertakes clinical studies. A focused initiative to build capacity in scientific publishing in Africa deserves special mention. The Forum for African Medical Editors is working to harmonize the publishing of guidelines, with full independent review systems to be implemented in 15 African medical journals, and at least 3 additional journals to be indexed in PubMed by the end of 2005.

36. The not-for-profit organization Medicines for Malaria Venture is dedicated to discovering and developing antimalarial medicines to be delivered to populations of disease-endemic countries. Its goal is to develop safe, effective and affordable antimalarial medicines for less than $1 per adult treatment, in order to reach the greatest number of malaria sufferers. Because cost is a major fa[illegible] affecting access to antimalarial medicines, the organization has made it a pr[illegible] to develop drugs with low intrinsic "cost of goods", in part by focusing on [illegible]e process chemistry and in part by manufacturing in regions such as China, [illegible]a, and the Republic of Korea, which are more competitive. Medicines for Malaria Venture has made significant progress towards realizing the goal of producing at least one new antimalarial drug by 2010. The portfolio has grown from 15 projects in 2002 to 21 projects at the end of 2003. Such rapid advances in malaria research are made possible by the organization's pioneering collaborations with nearly 40 public and private institutions around the world. Pharmaceutical, biotech, and research institute partners contribute their know-how and facilities, while the Medicines for Malaria Venture Expert Scientific Advisory Committee, public sector collaborators, academics and board members donate their time and talents.

37. Thanks to this pooling of knowledge and resources, the costs of developing new malaria treatments are significantly reduced, bringing the goal of effective treatments for all one step closer to becoming a reality. Innovation comes at a significant upfront price. Medicines for Malaria Venture estimates that it requires $200 million to develop one new fixed-dose combination antimalarial drug. Although it is a significant sum, it is a fraction of the industry standard of $800 million or more. To develop new antimalarial medicines for the endemic population, special groups such as children and pregnant women, and stay one step ahead of drug resistance, Medicines for Malaria Venture predicts that it will need at least $30 million per year by 2006, when more projects move into the expensive phases of clinical development.

38. Despite decades of research, the development of an effective malaria vaccine has been more complex than expected. There are more than 5,000 antigens encoded by the Plasmodium falciparum parasite, but which exact antigens produce the key protective immune response in human hosts have yet to be identified. Despite numerous complexities, prospects are higher with the elucidation of the genomic sequence of Plasmodium falciparum and the increasing — but yet limited — research funding in recent years. It is commonly accepted that an effective malaria vaccine should ultimately target multiple antigens and multiple stages to generate an effective immunological response. More research on antigenic polymorphism, duration of efficacy, means of antigen combination and vaccine delivery systems capable of inducing the desired immune response is required, according to the population to be protected and results of epidemiological studies. The magnitude of financial private and public investment in vaccine development should be proportional to future public health benefits that may be accrued.

X. Progress made towards reaching the Abuja goals

39. A preliminary report on the implementation of the Plan of Action of the Abuja Declaration indicates that all surveyed countries (39) have reported having a national health policy. The vast majority of countries (92 per cent) have district health plans, which reflect the national health policy. In addition, 97 per cent of these countries have basic intervention packages, including malaria, which is being implemented in over 80 per cent of the health facilities of more than half (70 per cent) of the countries.

40. Among 34 African countries from which the information is available, national health expenditures range from 1 to 20 per cent of the government budget, with a median of 8 per cent. Only one country (Zimbabwe) has met or exceeded the goals of the Maputo Declaration of July 2003, during which the African Union committed itself to allocating at least 15 per cent of government budgets to health. Only one third of the countries provided information on the distribution of the health budget among primary, secondary and tertiary care. The allocation of the health budget to primary care ranged from 17 to 54 per cent, with a median of 32 per cent. On the other hand, the health budget distribution to secondary and tertiary care ranged from 10 to 60 per cent (median 22 per cent) and from 10 to 46 per cent (median 25 per cent), respectively.

41. All African countries have a national antimalarial treatment policy. About two thirds of the countries have changed their antimalarial treatment policy. Among the countries that have changed their antimalarial treatment policy, 65 per cent did so after the adoption of the Abuja Declaration. To date, however, only 14 African countries have adopted the WHO-recommended antimalarial treatment policy of artemisinin-based combination therapies and of these, only four countries are implementing them. In addition, the vast majority of countries (over 80 per cent) have protocols for referring patients with severe illnesses from front-line facilities to the next level of the health-care system.

42. The vast majority of countries (92 per cent) are using the integrated disease surveillance and response system, which includes malaria. However, of the 31 countries that adopted the system, only half are in the implementation phase.

43. All countries, except Mauritius, have an integrated management of childhood illnesses programme at different implementation phases. About half of the countries (51 per cent) are in the expansion phase of integrated management of childhood illnesses implementation, while about one third (36 per cent) of the countries are in the early implementation phase. Among the countries that are in the expansion phase, about one half have 50 per cent or more of their districts implementing the programme.

44. Recent demographic and health surveys or multiple indicators cluster surveys conducted between 2000 and 2002 in 25 African countries showed that the percentage of children less than five years old with reported fever that have received antimalarial treatment ranged from 3 to 69 per cent, with a median of 51 per cent. Most of these population-based surveys are often conducted during the dry season for logistical reasons; therefore, in countries where malaria transmission is not stable throughout the year, most of the fever cases are likely to be of non-malaria origin. Although these same surveys have reported low levels of coverage among children less than five years old who slept under an insecticide-treated net the night preceding the survey (from 0.1 to 23 per cent, with a median of only 2 per cent), progress is being made in several countries now that increased resources have become available for scaling up malaria control activities. Out of 44 African countries, 18 (41 per cent) have waived taxes and tariffs on nets, netting materials and insecticides.

XI. Monitoring and evaluation of Roll Back Malaria activities

45. Monitoring and evaluation of Roll Back Malaria progress has been intensified since 2002. The *Africa Malaria Report 2003* described the malaria burden and trends, policies and implementation of key interventions, constraints and obstacles to implementation and financing in Africa south of the Sahara. Data was mainly from the period from 1998 to 2002 and, as such, provide a baseline against which to evaluate progress by 2005.

46. In May 2003, a Monitoring and Evaluation Reference Group was established as an advisory body of Roll Back Malaria partners, co-chaired by WHO and UNICEF, to establish robust systems to reliably monitor the malaria situation and evaluate the effectiveness of Roll Back Malaria interventions. The Group has established task forces on five priority issues: (a) malaria mortality trends, to address the monitoring and estimation of malaria-attributed and malaria-related mortality, for country-level impact monitoring as well as global burden estimations; (b) malaria prevalence indicator, to develop a consensus on estimation of the morbidity burden of malaria and the malaria prevalence indicator of the Millennium Development Goals; (c) malaria-related anaemia, to address the possible use of anaemia in young children and/or pregnant women as an additional indicator of malaria burden and control impact, depending on data-collection costs, and with representation from the nutritional programmatic field; (d) strengthening of national monitoring and evaluation capacity for Roll Back Malaria activities, to develop a framework for providing support at country and subregional level for improved monitoring and evaluation systems; and (e) population-based surveys, to develop appropriate tools and guidelines for the collection of high-quality data on core Roll Back Malaria indicators for use by national programmes. In addition to further improvements in the demographic and health survey and multiple indicators cluster

survey areas related to malaria, in 2004 a malaria indicator survey was developed and is now available for use at the country level. The task force also explores options for additional, more regular, surveys of intervention coverage in Roll Back Malaria priority countries, including collaboration with other planned surveys (e.g. Expanded Programme on Immunizations cluster surveys and AIDS indicator surveys). All meeting reports from the Monitoring and Evaluation Reference Group and its task forces are available on the Roll Back Malaria Partnership web site (http://rbm.who.int).

47. Building upon the *Africa Malaria Report 2003*, a global malaria report will be prepared for dissemination by the end of 2004. This first Roll Back Malaria global report will outline the epidemiological situation of malaria in malaria-endemic countries throughout the world, and will provide information on the status of malaria interventions and policies. The progress of implementation in individual country programmes and the support provided by the international community will also be reviewed for a group of priority countries. This first global malaria report will be updated on a yearly basis thereafter and will serve as an overview of the measures taken and progress made towards the achievement of the mid-term target. Key sources on coverage with insecticide-treated nets and antimalarial treatment will include the demographic and health surveys conducted by Macro International, with core support from the United States Agency for International Development (USAID), and the multiple indicator cluster surveys conducted by UNICEF. The report to the General Assembly at its sixtieth session will include the most recent information on the global malaria situation, including an update on activities related to the evaluation of progress towards the mid-term targets. For the evaluation of the 2005 achievements against the Abuja coverage targets, much data on these indicators will derive from the next round of multiple indicator cluster surveys that will be carried out in 2005, and for which data will be reported in 2006.

XII. Conclusions and recommendations

48. **Malaria is preventable, treatable and curable. Major advances in control can be achieved rapidly in many countries using existing tools, especially those with a proven impact in Africa: insecticide-treated nets, prompt and effective treatment and intermittent preventive treatment in pregnancy. Governments of malaria-endemic countries will need to continue to increase domestic resources allocated for malaria control. Malaria-endemic countries will also continue to require substantial international support to expand the coverage of existing control tools. In addition, efforts to develop new tools, such as a vaccine against malaria, improved rapid diagnostic tests, effective combinations of antimalarial medicines and insecticides, deserve continuing support.**

49. **Progress in malaria control will likely accelerate with increased resources available through new financial sources, such as the Global Fund to Fight AIDS, Tuberculosis and Malaria. Estimations are under revision, but it can be stated safely that more than US$ 2 billion per year are needed to effectively combat malaria in Africa alone. Currently, only about one quarter of this amount is available. However, financial investments have increased rapidly over the past few years and should be complemented by increased technical support to national programmes and capacity development to ensure an**

efficient increase through strengthened health systems, as well as documentation of results.

50. **It is therefore recommended that the General Assembly:**

(a) **Call upon the international community to support ways to expand access to artemisinin-based combination therapy for populations at risk of falciparum malaria in Africa, including commitment of new funds, innovative financial and procurement mechanisms of artemisinin-based combination therapy, and scaling up of artemisinin production to meet the increased need;**

(b) **Call upon endemic countries in Africa, south of the Sahara, to establish policies and programmes to ensure rapid scale-up to at least 60 per cent coverage of those at risk by insecticide-treated nets, wherever this is the vector control method of choice, by applying expeditious approaches, including targeted free or highly subsidized distribution to vulnerable groups;**

(c) **Call upon the international community to support investments in the development of new antimalarial medicines and insecticides for effective malaria control implementation in view of the challenging resistance to antimalarials, as well as vector populations;**

(d) **Call upon the international community to support coordinated efforts to improve surveillance and monitoring and evaluation systems to better track and report changes in coverage of recommended Roll Back Malaria interventions and subsequent reductions in the burden of malaria.**